

Somatic Cell and Molecular Genetics

Volume 14, 1988

Formerly *Somatic Cell Genetics*

EDITOR

Richard L. Davidson, University of Illinois College of Medicine, Chicago

ASSOCIATE EDITORS

Mario Capecchi, University of Utah, Salt Lake City

Yoshio Okada, Osaka University, Osaka

Frank H. Ruddle, Yale University, New Haven

EDITORIAL BOARD

Helen Blau, Stanford University School of Medicine, Stanford

Walter Bodmer, Imperial Cancer Research Fund Laboratories, London

Thomas Caskey, Baylor College of Medicine, Houston

Lawrence Chasin, Columbia University, New York

Franklin Costantini, Columbia University, New York

Gretchen Darlington, Baylor College of Medicine, Houston

Robert Fraley, Monsanto Company, St. Louis

Uta Francke, Yale University School of Medicine, New Haven

Dean Hamer, National Cancer Institute, Bethesda

Mary Harper, Gen-Probe, San Diego

Morgan Harris, University of California, Berkeley

Peter Howley, National Cancer Institute, Bethesda

Hilary Koprowski, The Wistar Institute, Philadelphia

John Littlefield, Johns Hopkins University School of Medicine, Baltimore

Barbara Migeon, Johns Hopkins University School of Medicine, Baltimore

Dusty Miller, Hutchinson Cancer Research Center, Seattle

Beatrice Mintz, Institute for Cancer Research, Philadelphia

Richard Mulligan, Massachusetts Institute of Technology, Boston

David Patterson, University of Colorado Medical Center, Denver

Theodore T. Puck, University of Colorado Medical Center, Denver

Walter Schaffner, Universitat Zurich, Switzerland

Matthew Scharff, Albert Einstein College of Medicine, Bronx

Immo Scheffler, University of California, San Diego

Thomas Shows, Roswell Park Memorial Institute, Buffalo

Louis Siminovich, University of Toronto, Toronto

Larry H. Thompson, University of California, Livermore

Shirley Tilghman, Princeton University, Princeton

Somatic Cell and Molecular Genetics is published bimonthly by Plenum Publishing Corporation, 233 Spring Street, New York, N.Y. 10013. Subscription orders should be addressed to the publisher. *Somatic Cell and Molecular Genetics* is abstracted or indexed in Beck Medical Information, Biological Abstracts, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, International Abstracts of Biological Sciences, Referativnyi Zhurnal, and Science Citation Index. © 1988 Plenum Publishing Corporation. *Somatic Cell and Molecular Genetics* participates in the Copyright Clearance Center (CCC) Transactional Reporting Service. The appearance of a code line at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use. However, this consent is given on the condition that the copier pay the flat fee of \$6.00 per copy per article (no additional per-page fees) directly to the Copyright Clearance Center, Inc., 27 Congress Street, Salem, Massachusetts 01970, for all copying not explicitly permitted by Sections 107 or 108 of the U.S. Copyright Law. The CCC is a nonprofit clearinghouse for the payment of photocopying fees by libraries and other users registered with the CCC. Therefore, this consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale, nor to the reprinting of figures, tables, and text excerpts. 0740-7750/88 \$6.00

Subscription rates:

Volume 14, 1988 (6 issues) \$250.00 (outside the U.S., \$278.00). Price for individual subscribers certifying that the journal is for their personal use, \$59.50 (outside the U.S., \$68.50).

Volume 15, 1989 (6 issues) \$275.00 (outside the U.S., \$320.00). Price for individual subscribers certifying that the journal is for their personal use, \$62.50 (outside the U.S., \$75.00).

Second-class postage paid at New York, N.Y., and at additional mailing offices. Postmaster: Send address changes to *Somatic Cell and Molecular Genetics*, Plenum Publishing Corporation, 233 Spring Street, New York, N.Y. 10013.

Printed in the USA.

Somatic Cell and Molecular Genetics is published bimonthly by Plenum Publishing Corporation, 233 Spring Street, New York, N.Y. 10013. Subscription orders should be addressed to the publisher. *Somatic Cell and Molecular Genetics* is abstracted or indexed in Beck Medical Information, Biological Abstracts, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, International Abstracts of Biological Sciences, Referativnyi Zhurnal, and Science Citation Index. © 1988 Plenum Publishing Corporation. *Somatic Cell and Molecular Genetics* participates in the Copyright Clearance Center (CCC) Transactional Reporting Service. The appearance of a code line at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use. However, this consent is given on the condition that the copier pay the flat fee of \$6.00 per copy per article (no additional per-page fees) directly to the Copyright Clearance Center, Inc., 27 Congress Street, Salem, Massachusetts 01970, for all copying not explicitly permitted by Sections 107 or 108 or the U.S. Copyright Law. The CCC is a nonprofit clearinghouse for the payment of photocopying fees by libraries and other users registered with the CCC. Therefore, this consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale, nor to the reprinting of figures, tables, and text excerpts. 0740-7750/88 \$6.00

Somatic Cell and Molecular Genetics

Volume 14, Number 1

January 1988

CONTENTS

Two Membrane-Bound Proteins Associated with Alanine Resistance and Increased A-System Amino Acid Transport in Mutants of CHO-K1 <i>John Moffett, Elizabeth Mendiaz, Michael Jones, and Ellis Englesberg</i>	1
Demethylation of Two Specific DNA Sequences in Expressed Human Immunoglobulin Light Kappa Constant Genes <i>N. O. Bianchi, P. Peltomäki, M. S. Bianchi, S. Knuutila, and A. de la Chapelle</i>	13
Analysis of WAGR Deletions and Related Translocations with Gene-Specific DNA Probes, Using FACS-Selected Cell Hybrids <i>Anne Seawright, Judy M. Fletcher, Judy A. Fantes, Harris Morrison, David J. Porteous, Steven S.-L. Li, Nicholas D. Hastie, and Veronica van Heyningen</i>	21
Isolation of an Abundantly Expressed Sequence from the Human X Chromosome by Differential Screening <i>Michael V. Wiles, Caroline M. Alexander, and Peter N. Goodfellow</i>	31
Genetic Analysis of Tumorigenesis. XXXI: Retention of Short Arm of Chromosome 3 in Suppressed CHEF Cell Hybrids Containing c-Ha-ras (EJ) Gene <i>Ruth W. Craig, Inder K. Gadi, and Ruth Sager</i>	41
DNA Methylation and Genetic Inactivation at Thymidine Kinase Locus: Two Different Mechanisms for Silencing Autosomal Genes <i>Alexander Dobrovic, J. L. Pierre Gareau, Gail Ouellette, and W. Edward C. Bradley</i>	55
The Family of Mouse Phosphoglycerate Kinase Genes and Pseudogenes <i>Chaker N. Adra, Nathan E. Ellis, and Michael W. McBurney</i>	69
Cytogenetic Evidence of Gene Amplification as a Mechanism for Tumor Cell Invasion <i>Sandra J. Bevacqua, Christopher W. Greeff, and Mary J. C. Hendrix</i>	83
BRIEF COMMUNICATIONS	
Genes for Human Vitamin K-Dependent Plasma Proteins C and S Are Located on Chromosomes 2 and 3, Respectively <i>George L. Long, Angus Marshall, Julia C. Gardner, and Susan L. Naylor</i>	93
Mapping of Human Fibronectin Receptor β Subunit Gene to Chromosome 10 <i>Yong Zhang, Marc Saison, Marijke Spaepen, Bart De Strooper, Fred Van Leuven, Guido David, Herman Van den Berghe, and Jean-Jacques Cassiman</i>	99
Coding Sequence for Human 18,000-Dalton Hydrophobic Pulmonary Surfactant Protein Is Located on Chromosome 2 and Identifies a Restriction Fragment Length Polymorphism <i>Philip A. Emrie, Carol Jones, Talia Hofmann, and James H. Fisher</i>	105
MEETING ANNOUNCEMENTS	111

CONTENTS

Inactivation and Reactivation of Sex-Linked Steroid Sulfatase Gene in Murine Cell Culture	113
<i>Daniel F. Schorderet, Elisabeth A. Keitges, Patrice M. Dubois, and Stanley M. Gartler</i>	
cDNA Cloning and Assignment to Chromosome 21 of <i>IFI-78K</i> Gene, the Human Equivalent of Murine <i>Mx</i> Gene	123
<i>Michel A. Horisberger, Marc Wathelet, Josiane Szpirer, Claude Szpirer, Quamrul Islam, Göran Levan, Georges Huez, and Jean Content</i>	
Mapping and Gene Order of U1 Small Nuclear RNA, Endogenous Viral <i>env</i> Sequence, Amylase, and Alcohol Dehydrogenase-3 on Mouse Chromosome 3	133
<i>C. Blatt, D. Saxe, W. F. Marzluff, S. Lobo, M. N. Nesbitt, and M. I. Simon</i>	
The Embryonic and Adult Mouse U1 snRNA Genes Map to Different Chromosomal Loci	143
<i>Elsebet Lund and Muriel N. Nesbitt</i>	
Direct Selection of Chinese Hamster Ovary Strains Deficient in CTP Synthetase Activity	149
<i>Ann Kelsall and Mark Meuth</i>	
Factors Influencing Efficiency and Reproducibility of Polybrene-Assisted Gene Transfer	155
<i>Rémy J. Aubin, Michael Weinfeld, and Malcolm C. Paterson</i>	
Mapping and Characterization of Mutations Induced by Benzo [a] pyrene Diol Epoxide at Dihydrofolate Reductase Locus in CHO Cells	169
<i>Adelaide M. Carothers, Gail Urlaub, Dezider Grunberger, and Lawrence A. Chasin</i>	
Mitochondrial Chloramphenicol-Resistant Mutants Can Have Deficiencies in Energy Metabolism	185
<i>Neil Howell and M. S. Nalty</i>	
Cell Fusion-Mediated Improvement in Transfection Competence for Repair-Deficient Mutant of Mouse T Cell Line	195
<i>Tadahiro Shiomi, Naoko Hieda-Shiomi, Koki Sato, Takeo Yoshizumi, and Tohru Nakazawa</i>	
BRIEF COMMUNICATIONS	
<i>In Situ</i> Localization of Murine <i>c-Ki-ras-2</i> Oncogene: Preliminary Evidence for Conservation of Telomeric Territory of Oncogenes?	205
<i>Patricia A. Martin-DeLeon and Sheila R. Picciano</i>	
Mapping of Gene Encoding Mouse Placental Alkaline Phosphatase to Chromosome 4	211
<i>Mineko Terao, Dimitrina Pravtcheva, Frank H. Ruddle, and Beatrice Mintz</i>	
Structural Gene Encoding Human Factor XII Is Located at 5q33-qter	217
<i>N. J. Royle, M. Nigli, D. Cool, R. T. MacGillivray, and J. L. Hamerton</i>	

Somatic Cell and Molecular Genetics

Volume 14, Number 3

May 1988

CONTENTS

Definition of Selectable Cell Surface Markers for Human Chromosomes and Chromosome Segments in Rodent-Human Hybrids	223
<i>Wolfgang J. Rettig, Karl-Heinz Grzeschik, Aswani K. Yenamandra, Esperanza Garcia, and Lloyd J. Old</i>	
Irradiation-Reduced Human Chromosome 21 Hybrids	233
<i>Sharon Graw, Jeffrey Davidson, James Gusella, Paul Watkins, Rudolph Tanzi, Rachael Neve, and David Patterson</i>	
Phleomycin Resistance as a Dominant Selectable Marker in CHO Cells	243
<i>Philippe Mulsant, Anne Gatignol, Maurice Dalens, and Gérard Tiraby</i>	
Rates of Generation of Methotrexate-Resistant Variants in Cells Temperature-Sensitive for Malignant Transformation	253
<i>Ann F. Chambers, John F. Harris, and John S. Grundy</i>	
Comparative Study of DNase I Sensitivity at the X-Linked Human <i>HPRT</i> Locus	261
<i>Dong Lin and A. Craig Chinault</i>	
Association of High Rate of Recombination with Amplification of Dominant Selectable Gene in Human Cells	273
<i>John P. Murnane and Michael J. Yezzi</i>	
Complementation of Metabolic Defect in Phosphoglycerate Kinase (PGK) -Deficient Line of Chinese Hamster Ovary Cells by Introduction of Human <i>PGK</i> cDNA	287
<i>Pelin Faik, James I. H. Walker, and Michael J. Morgan</i>	
Spontaneous Reversion of Novel Lesch-Nyhan Mutation by <i>HPRT</i> Gene Rearrangement	293
<i>Thomas P. Yang, John T. Stout, David S. Konecki, Pragna I. Patel, Raye L. Alford, and C. Thomas Caskey</i>	
Development and Characterization of Mutant Chicken Cell Lines for Somatic Cell Genetics Studies	305
<i>K. Zinkewich-Péotti, W. E. C. Bradley, and R. Morais</i>	
BRIEF COMMUNICATION	
Gene Encoding Human p250 T-Cell Activation Antigen Maps to Human Chromosome 11	315
<i>Yukihiro Akao, Kazuhiko R. Utsumi, Kazuyuki Naito, Ryuzo Ueda, Toshitada Takahashi, and Kazumasa Yamada</i>	

CONTENTS

Colony Hybridization to Identify Mammalian Cells Containing Amplified, Transfected, or Expressed Sequences <i>T. G. Rossman and L. M. Rubin</i>	321
Isolation and Characterization of Chinese Hamster Cell Line Resistant to Monofunctional Alkylating Agents <i>Akira Sono and Kengo Sakaguchi</i>	329
Cytoplasmic Suppression of Tumor Progression in Reconstituted Cells <i>Jerry W. Shay, Liu Yinong, and Harold Werbin</i>	345
Enhancement of DNA Repair Capacity of Mammalian Cells by Carcinogen Treatment <i>Miroslava Protić, Emmanuel Roilides, Arthur S. Levine, and Kathleen Dixon</i>	351
Characterization, Evolutionary Relationships, and Chromosome Location of Processed Mouse HPRT Pseudogene <i>Marcos Isamat, Kay F. Macleod, Angus King, Carolanne McEwan, and David W. Melton</i>	359
Identification of Human Gene Complementing ts A1S9 Mouse L-Cell Defect in DNA Replication Following DNA-Mediated Gene Transfer <i>Eldad Zacksenhaus and Rose Sheinin</i>	371
Characterization of Single-Copy Probe from Vicinity of Centromere of Human Chromosome 1 <i>Joseph Solus, Alain Jacquemin-Sablon, Kathleen Carine, Elysa Waltzer, and Immo E. Scheffler</i>	381
Sequence Specificity of Mutations Induced by Benzo[a]Pyrene-7,8-Diol-9,10-Epoxyde at Endogenous <i>aprt</i> Gene in CHO Cells <i>M. Mazur and B. W. Glickman</i>	393
BRIEF COMMUNICATIONS	
Rat <i>c-ras</i> Oncogene Is Located on Chromosome 4 and May Be Activated by Sequences from Chromosome 13 <i>Sigurdur Ingvarsson, Charlotte Asker, Josiane Szpirer, Göran Levan, and George Klein</i>	401
Regional Assignment of Human Tissue Factor Gene (<i>F3</i>) to Chromosome 1p21-p22 <i>Fa-Ten Kao, Judith Hartz, Renata Horton, Yale Nemerson, and Steven D. Carson</i>	407
Gene for Lipoamide Dehydrogenase Maps to Human Chromosome 7 <i>Gail Otulakowski, Brian H. Robinson, and Huntington F. Willard</i>	411

Somatic Cell and Molecular Genetics

Volume 14, Number 5

September 1988

CONTENTS

- Cloning and Chromosomal Location of Human Genes Inducible by Type I Interferon 415
Marc G. Wathelet, Josiane Szpirer, Christine B. Nols, Isabelle M. Clauss, Lukas De Wit, M. Quamrul Islam, Göran Levan, Michel A. Horisberger, Jean Content, Claude Szpirer, and Georges A. Huez
- Molecular Analysis of Expression of Parental Cell Properties in Hybrids Between Monocytes and a Myeloma Cell Line 427
Mihoko Setoguchi, Seiji Yoshida, Yasunori Higuchi, Shin'ichiro Akizuki, and Shunsuke Yamamoto
- Steady-State and Nuclear Run-On Analyses of Transcription in a Temperature-Sensitive Chinese Hamster Cell Mutant with a Defect in RNA Metabolism 439
Thelma C. Slezynger and Immo E. Scheffler
- DNA Binding Factors for the CpG-Rich Island Containing the Promoter of the Human X-Linked PGK Gene 461
Thomas P. Yang, Judith Singer-Sam, Josephine C. Flores, and Arthur D. Riggs
- Two Pathways of Transferrin Recycling Evident in a Variant of Mouse LMTK⁻ Cells 473
Donald O. O'Keefe and Rockford K. Draper
- Cross-Resistance of Novobiocin-Resistant BHK Cell Line to Topoisomerase II Inhibitors 489
Ryoji Ishida, Miwako Nishizawa, Takeharu Nishimoto, and Taijo Takahashi
- Three New Complementation Groups of Temperature-Sensitive Chinese Hamster Ovary Cell Mutants Defective in the Endocytic Pathway 499
Penelope A. Colbaugh, Chia-Yi Kao, Shang-Pwu Shia, Margaret Stookey, and Rockford K. Draper
- BRIEF COMMUNICATIONS
- Assignment of Gene for Coagulation Factor V to Chromosome 1 in Man and to Chromosome 13 in Rat 509
B. Dahlbäck, C. Hansson, M.Q. Islam, J. Szpirer, C. Szpirer, Å. Lundwall, and G. Levan
- Assignment of Human Gene Encoding Testis-Specific Lactate Dehydrogenase C to Chromosome 11, Region p14.3-p15.5 515
Fa-Ten Kao, Kun C. Wu, Martha L. Law, Judith A. Hartz, and Yun-Fai Lau

Somatic Cell and Molecular Genetics

Volume 14, Number 6

November 1988

CONTENTS

Fingerprinting Cell Lines: Use of Human Hypervariable DNA Probes to Characterize Mammalian Cell Cultures	519
<i>John Thacker, Michael B.T. Webb, and Paul G. Debenham</i>	
Further Characterization of a Somatic Cell Mutant Defective in Regulation of 3-Hydroxy-3-methylglutaryl Coenzyme A Reductase	527
<i>Dennis Peffley, Jon Miyake, Sherry Leonard, Charles von Gunten, and Michael Sinensky</i>	
A-11: Cell Type-Specific and Single-Active-X Transcription Controls of Newly Found Gene in Cultured Human Cells	541
<i>Nancy Nadon, Nancy Korn, and Robert DeMars</i>	
Genetic Analysis of L-Ethionine-Mediated Induction of Alpha-Fetoprotein in Mice	553
<i>Randy C. Mifflin, Peter C. Moller, and John Papaconstantinou</i>	
Deletion and Hypermethylation of Thymidine Kinase Gene in V79 Chinese Hamster Cells Resistant to Bromodeoxyuridine	567
<i>Thomas L. Wise and Morgan Harris</i>	
Chromosome Mapping of Biological Pathways by Fluorescence-Activated Cell Sorting and Cell Fusion: Human Interferon Gamma Receptor as a Model System	583
<i>Vincent Jung, Carol Jones, Abbas Rashidbaigi, David D. Geyer, Helvise G. Morse, Rosemary B. Wright, and Sidney Pestka</i>	
Gene Dosage Mutants at Adenine Phosphoribosyltransferase Locus Induced by Colcemid in Chinese Hamster V79-AP4 Cells	593
<i>Carlo M. Colella, Silvana Simi, Giuseppe Rainaldi, Theo van Boxel, Giuliano Della Valle, Antonio F. Peverali, Daniela Talarico, Tullio Mariani, Antonio Piras, and Marcella Simili</i>	
An Eighth Complementation Group of Rodent Cells Hypersensitive to Ultraviolet Radiation	605
<i>L.H. Thompson, T. Shiomi, E.P. Salazar, and S.A. Stewart</i>	
Effect of Gamma Rays on Efficiency of Gene Transfer in DNA Repair-Proficient and -Deficient Cell Lines	613
<i>Jaime S. Rubin</i>	
Partial Physical Map of Human Chromosome 21	623
<i>Katheleen Gardiner, Paul Watkins, Maximilian Münke, Harry Drabkin, Carol Jones, and David Patterson</i>	
BRIEF COMMUNICATION	
Genetic Analysis of Tumorigenesis: XXXII. Localization of Constitutionally Amplified <i>KRAS</i> Sequences to Chinese Hamster Chromosomes X and Y by In Situ Hybridization	639
<i>Göran Stenman, Anthony Anisowicz, and Ruth Sager</i>	
ERRATUM	645
MEETING ANNOUNCEMENTS	647
AUTHOR INDEX TO VOLUME 14	649
SUBJECT INDEX TO VOLUME 14	653

Forthcoming . . .
SUBCELLULAR BIOCHEMISTRY
Volume 12
Immunological Aspects

Edited by **J. R. Harris**, *North East Thames*
Regional Transfusion Centre,
Brentwood, Essex, UK

From reviews of the series:

"It would be very surprising if any self-respecting library does not subscribe to the Subcellular Biochemistry series. In case there are one or two such disadvantage institutions, one can only hope that they see the light."

—*Biochemical Education*

This is the first volume under the editorship of J. R. Harris, who succeeded the late Donald Roodyn as editor of this well established series. Dr. Harris, while retaining the fundamental biochemical orientation of past volumes, has enlarged the scope of the series to include the related biomedical topics. Each volume in the series will address a specific subject. Volume 12, *Immunological Aspects*, focuses on the application of immunological techniques to biochemical problems, the immunobiochemistry of blood groups and other cell surface antigens, and the use of monoclonal antibodies for the study of a range of different cellular, subcellular, and enzymatic systems.

CONTENTS: Breast Cancer Associated Antigens Defined by Monoclonal Antibodies, M. R. Price. The Immunochemistry of Some Blood Group Antigens; Relationship to Erythrocyte Membrane Structure and in Haemagglutination, A. H. Merry *et al.* Molecular Characteristics of the Blood Group Rh₀(D) Molecule, C. G. Gahmberg. Expression of the ABH, Lewis and Related Antigens on the Glycoproteins of the Human Jejunal Brush Border, F. R. Green *et al.* Biogenesis and Intracellular Transport of Intestinal Brush Border Membrane Hydrolases: Use of Antibody probes and Tissue Culture, H.-P. Hauri. Immunoaffinity Purification of Membrane Fractions from Mammalian Cells, P. J. Richardson and J. P. Luzio. The use of Antibodies for Analysis of the Secretory and Endocytic Paths of Eukaryotic Cells, Y. Chicheportiche and A. M. Tartakoff. Monoclonal Antibodies in Investigations on Astrocytes, S. K. Malhotra. Current Molecular Approaches to Experimental Thyroid Autoimmunity, B. R. Champion *et al.* Biochemistry and Pathophysiology of the Molecular Forms of Cholinesterases, Z. Rakonczay and S. Brimjojin.

ISBN: 0-306-42737-0/approx. 385 pp. + Index/III./1988/\$69.50/\$83.40 (outside US & Canada)



PLENUM PUBLISHING CORPORATION
233 Spring Street, New York, NY 10013-1578

CHANGING YOUR ADDRESS?

In order to receive your journal without interruption, please complete this Change of Address notice and forward to the Publisher, 60 days in advance, if possible.

Old Address: (PLEASE PRINT)

Name _____

Street _____

City _____

State (or Country) _____

Zip Code _____

New Address: (PLEASE PRINT)

Name _____

Street _____

City _____

State (or Country) _____

Zip Code _____

Date New Address Effective: _____

Name of Journal: _____

Plenum Publishing Corporation
233 Spring Street
New York, New York 10013